PDB4

LONG-TERM OUTCOMES OF SWITCHING PATIENTS WITH TYPE 2 DIABETES FROM BIPHASIC INSULIN TO BIPHASIC INSULIN ASPART 30/70: AN IMPROVE STUDY SUBGROUP ANALYSIS

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OBJECTIVES: The IMPROVE study includes results of 52,419 patient's after 26 weeks of treatment with biphasic insulin aspart 30/70 (BIAsp30) in routine care setting. The aim of this analysis was to project long-term clinical outcomes in patients with type 2 diabetes from the IMPROVE study switched from biphasic human insulin (BHI) to BIAsp30. **METHODS:** In total, 4,368 patients on BHI from the IMPROVE study were used in the present analysis. The CORE Diabetes Model was used to project long-term clinical outcomes based on the baseline characteristics (male 58.2%, mean age 57.0 years, duration of diabetes 10.7 years, HbA1c 9.2%, BMI 26.2 kg/m^2 and total daily insulin dose 32.8 IU). Patients were assumed to either continue on BHI, or switch to BIAsp30 and obtain the significant ($p \leq 0.01$) treatment effects of BIAsp30 observed in the IMPROVE study (HbA1c improvement of 1.9 percentage points, 0.24 kg weight loss and 29.3 less major hypoglycemic events per 100 patient years). **RESULTS:** The improved glycemic control resulting from a switch from BHI to BIAsp30 led to a projected delay in the onset of any diabetes-related complications of 0.7 years (2.0 versus 1.3, respectively). E.g. the projected delay of suffering a myocardial infarction was 1.7 for BIAsp30 and 1.4 years BHI. The cumulative incidence of complications was projected to decrease with BIAsp30 in the majority of parameters studied, e.g. the cumulative incidence of severe vision loss was projected to decrease by 8.5% (1.3 %-point absolute risk reduction) and strokes by 8.6% (1.1 %-point absolute risk reduction). The average life expectancy was projected to increase by 1.5 years. **CONCLUSIONS:** The long-term health outcome projections based on endpoints reported in the IMPROVE study indicate that switching patients with type 2 diabetes from BHI to BIAsp30 will improve life expectancy, delay the onset of diabetes-related complications, and reduce their cumulative incidence over patient lifetimes.

PDB5

SYSTEMATIC REVIEW OF THE EFFICACY AND SAFETY OF VILDAGLIPTIN FOR TYPE 2 DIABETES MELLITUS

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OBJECTIVES: The aim of the review was to compare the efficacy and safety of vildagliptin versus glimepiride as add-on therapy to metformin in patients with type 2 diabetes mellitus. **METHODS:** The analysis was performed in accordance with the rules of systematic review, based on the Cochrane Collaboration (Cochrane Reviewer's Handbook) guidelines and the Health Technology Assessment Agency in Poland recommendations. Literature search strategy was performed within the main medical databases: Medline, Cochrane Library, EMBASE, Biomed Central and CRD. **RESULTS:** one study of high quality was identified according to predefined selection criteria. The trial evaluated fifty-two-week effectiveness of vildagliptin plus metformin versus glimepiride plus metformin. The analysis disclosed non inferior efficacy of intervention and comparator in HbA1c reduction. The change in fasting plasma glucose was also comparable between groups. Patients in vildagliptin group more frequently reached a target HbA1c level of <7% without hypoglycaemia (50.9% of participants) than patients in glimepiride group (44.3% of participants). Furthermore vildagliptin was more efficient in body weight reduction; WMD = −1.79 (95% CI: −2.11; −1.47). The risk of hypoglycaemia episodes was higher within glimepiride therapy; RR = 0.10 (95% CI: 0.07; 0.16). Vildagliptin treatment resulted in lower incidence of adverse events, serious adverse events and discontinuation because of adverse events (respectively 74.5%, 7.1%, and 4.8% in vildagliptin group versus 81.1%, 9.5%, and 7.7% in glimepiride group). The risk of cardiovascular complications was higher in comparative group but it was not statistically significant. Dizziness, fatigue, asthenia, tremor, hyperhidrosis and hunger were significantly less frequent in vildagliptin group. **CONCLUSIONS:** Vildagliptin as add-on therapy to metformin is more efficient and safer technology than glimepiride combined with metformin in the treatment of type 2 diabetes mellitus.

PDB6

ADMINISTRATIVE CLAIMS ANALYSIS OF AN L-METHYLFOLATE COMBINATION PRODUCT IN PATIENTS WITH DIABETIC PERIPHERAL NEUROPATHY

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Oral administration of the combination prescription product containing L-methylfolate, pyridoxal-5'-phosphate, and methylcobalamin (MPM) has shown to increase epidermal nerve fiber density in humans, reduce neuropathic pain and restore sensation in patients with diabetic neuropathy (DPN). It is believed to increase vascular perfusion through lowering homocysteine and increasing nitric oxide levels. **OBJECTIVES:** Evaluate the clinical and economic impact of orally-administered MPM on patients with diabetic peripheral neuropathy (DPN) in a managed care setting. **METHODS:** Data were obtained from the 30+ million member HealthCore Integrated Research Databaseä. Patients with at least 1 claim for diabetes, antidiabetic agents and DPN and ≥2 claims for MPM between July 1, 2004 and April 30, 2007, with ≥6 months pre and ≥12 months post index eligibility were matched 2:1 on age, gender and health plan region with non-MPM treated patients. Cost comparisons were performed on the population <65 years old to assure full capture of health care costs. **RESULTS:** A total of 89 MPM treated patients and 178 matched controls were identified, 65% were male and mean (SD) age was 60.1 (±9.3) years. MPM treated patients were more likely to be treated with anticonvulsants in the pre-index period ($p < 0.01$). There was a 31% reduction in the use of anticonvulsants post-index for the MPM group and a 10% reduction in the control group. There was a meaningful albeit non-significant cost difference in the 12 month post-index DPN related costs between the <65 year old MPM and control groups ($1029 n = 56 vs. $1401 n = 112). **CONCLUSIONS:** This observational cohort study demonstrated a reduction in the use of anticonvulsant medication among the MPM cohort, perhaps denoting a reduction in the need for pain medication, and costs related to DPN were lower in the MPM group. Additional randomized controlled trials need to be conducted to validate these results.

PDB7

THE CLINICAL EFFECTIVENESS OF SOMATROPIN (GENOTROPIN®) IN CHILDREN WITH SHORT STATURE: A SYSTEMATIC REVIEW

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OBJECTIVES: Genotropin® is a brand of somatropin (human growth hormone [GH]) licensed for the treatment of children with short stature due to: growth hormone deficiency (GHD), Prader-Willi syndrome (PWS), Turner syndrome (TS), chronic renal insufficiency (CRI) and those born small for gestational age (SGA). Although final height (FH) is probably the most effective outcome for measuring somatropin effectiveness, there is a lack of randomised controlled trial (RCT) data reporting FH and other important outcomes, such as quality of life (QoL) which is rarely reported for children. The objective of this systematic review (SR) of RCTs and observational studies was to investigate the efficacy and safety of Genotropin in children with these indications, and identify whether the lack of relevant RCT data in this therapy area can be supplemented with observational studies. **METHODS:** Predefined search terms were used to search eight electronic databases, including Medline and Embase, for published English language studies. Additionally, bibliographies of included articles were examined for relevant studies. RCTs or observational studies were retrieved if they included a population of children (<16 years) with GHD, PWS, TS, CRI or SGA treated with Genotropin. The main reported outcome measures included FH and short-term growth responses, e.g. growth velocity. **RESULTS:** Thirty RCTs and 37 observational studies were identified. No RCTs were identified that included data on QoL. One RCT and 11 observational studies reported data for FH. FH was consistently improved following treatment with Genotropin. Seven of the observational studies were based on data sourced from the Pfizer International Growth Survey (KIGS), which showed significant gains of up to 2.3 height standard deviation scores. **CONCLUSIONS:** This SR reveals the paucity of long-term RCTs reporting data on FH and QoL in children, thus highlighting the consequent importance of observational studies of GH therapy, such as KIGS, which reports FH.

PDB8

ANTIDIABETIC DRUG UTILIZATION IN A UNIVERSITY HEALTH CARE SETTING

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OBJECTIVES: Diabetes mellitus (DM) is a worldwide problem. Data regarding the utilization pattern of antidiabetics is lacking in Malaysia. The present study evaluated the prescribing trends of antidiabetic drugs in a university health care centre in Malaysia during the years 2002 and 2003. **METHODS:** Retrospective data for 2002 and 2003 was collected from the USM Center for Knowledge, Communication and Technology. A drug utilization study using the Anatomical Therapeutic Chemical classification and defined daily doses (ATC/DDD) methods was conducted. Selected drug use indicators as suggested by WHO/INRUD were used in this study. Prescribing prevalence was expressed by the DDD methodology. The utilization of antidiabetic drugs was expressed as the number of defined daily doses per 1000 inhabitants per day (DDD/1000/day). **RESULTS:** The number of antidiabetic patients was 300. Total 1289 and 1565 prescription data were collated from the database for the years 2002 and 2003, respectively. The total number of different drugs prescribed in 2002 and 2003 were 2982 and 3345, respectively. Among these, 1997 (67.0%) of drugs prescribed in 2002 and 2389 (71.4%) of drugs prescribed in 2003 were antidiabetics. In general, the consumption of antidiabetics in USM Heath Centre increased from 3.4 DDD/1000/day in 2002 to 4.7 DDD/1000/day in 2003. Significant antidiabetic prescribing patterns related to metformin and gliclazide were observed in this study. Metformin was the most commonly prescribed drug while gliclazide was the most consumed drug. **CONCLUSIONS:** It is reasonable to conclude that diabetic medicine utilization is on increase. Much attention and effort should be directed towards establishing the burden of diabetes in USM in economic terms.

PDB9

IMPACT OF FDA SAFETY WARNINGS ON SUBSEQUENT DIABETES CARE FOR USERS OF ROSIGLITAZONE

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OBJECTIVES: To understand the impact of the May 2007 safety warning about rosiglitazone from the US Food and Drug Administration (FDA) on the subsequent

diabetes treatment for users of this drug. **METHODS:** Patients were selected from the MarketScan® databases who filled at least one prescription for rosiglitazone during the second quarter of 2007 and received at least 90 days of therapy during the first half of 2007. Each patient's use of all antidiabetic drugs was tracked by calendar quarter during 2007 and 2008. For comparison, similar longitudinal profiles were constructed for users of pioglitazone (same drug class) and for metformin (different class of oral antidiabetic agent). The net impact of the FDA safety warnings on user of rosiglitazone was assessed by comparing changes in their antidiabetic drug consumption with those for users of pioglitazone and and metformin. **RESULTS:** The study cohorts included: 37,087 rosiglitazone, 43,607 pioglitazone, and 147,055 metformin users. The groups were demographically similar, except for a higher proportion of women in the metformin cohort. By the end of 2008 only 32.6% of the rosiglitazone cohort continued to fill prescriptions for that agent, compared to 66.5% for pioglitazone and 76.5% for metformin. 18.9% of rosiglitazone users switched to pioglitazone. They also were more likely than the other cohorts to start using a DPP4 inhibitor (8.6% v. 6.1% and 5.2%, respectively) or insulin (5.3% v. 4.2% and 4.1%). **CONCLUSIONS:** The safety warnings in 2007 led to a high rate of discontinuation of rosiglitazone use, some of which was replaced by pioglitazone and other drugs with different mechanisms of action. However, new prescriptions did not fully offset the discontinuation of rosiglitazone, so the net result was a reduction in the average intensity of therapy.

PDB10

DIFFERENT PERSISTENCE WITH A BASAL SUPPORTED ORAL THERAPY (BOT) LEADS TO UNEQUAL DISTRIBUTIONS OF INSULIN TREATMENT REGIMENS IN TYPE-2-DIABETICS

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OBJECTIVES: Results from a representative German database [1] and findings from a real-life cross-sectional study [2] show an unequal distribution between basal supported oral therapy (BOT) and intensified conventional therapy (ICT) regimens in type-2-diabetics (T2D) treated with either insulin glargine (GLA) or NPH-insulin (NPH). This study assesses whether different persistence on the respective BOT can be the reason. **METHODS:** A Markov model was developed simulating the transition from BOT to ICT in the course of ten years in T2D treated either with GLA or NPH. Persistence data were obtained from the IMS Disease Analyzer database [3]. The model cohort consisted of 44,366 [4,5] statutorily-insured T2D starting a BOT either with GLA or NPH at a ratio of 1:1. **RESULTS:** The number of patients switching from BOT to ICT was continually lower in the GLA vs. NPH group ($p = 0.0002$). Therefore, the ratio of BOT to ICT in the GLA and NPH group changed differently over time. After two years 11,840 patients (from 22,183) remained on BOT in the GLA group compared to 6,928 patients (from 22,183) in the NPH group. After 6.50 years all patients who have started with a NPH-based BOT switched to ICT. Complete transition to ICT took 1,75 years longer in the GLA group (8.25 years). The model simulation yield BOT:ICT ratios in the first quarter of year 3 for GLA (46%:54%) and for NPH (24%:76%), similar to the above mentioned findings [1;2]. **CONCLUSIONS:** The simulation indicates a correlation between persistence on a basal supported oral therapy and the resulting distribution of treatment regimens (BOT:ICT ratio) in T2D either treated with GLA or NPH in real-life cross-sectional studies. References: [1] ABDA claims data for ambulatory prescriptions, [2] J Med Econ 2008; 11:695–712, [3] Diabetologie und Stoffwechsel 2009; 4:1–6 [4] DDU: Gesundheitsbericht Diabetes 2008 [5] Diabetes und Stoffwechsel 2003; 12:83–94.

PDB11

DATABASE ANALYSIS ON PREVALENCE AND RISK FACTORS OF DIABETIC FOOT SYNDROME (DFS) IN GERMANY

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OBJECTIVES: To show the prevalence of DFS and its risk factors in Germany in 2008. **METHODS:** Analyses used IMS® Disease Analyzer database (includes representative information on approximately 12 million patients from more than 3000 office-based physicians). Patients with a diagnosis of diabetes mellitus in 2008 were included. All documented diagnoses of these patients in 2008 based on ICD-10 (international classification of diseases) were analyzed. **RESULTS:** Data from **116,207 diabetes type-2 patients** (T2D) and 9820 (7.8%) diabetes type 1 patients (T1D) were analyzed. DFS was registered among 2.6% [2.3–2.9] of T1D patients and 2.1% [2.0–2.2] of T2D patients. Projected to national level there are approximately 130,000 patients diagnosed in 2008. But much more patients had high risk of DFS: 12.0% of T1D and 10.5% of T2D patients are discovered among diabetic neuropathy, 10.9%/12.3% diabetic angiopathy. Additionally 3.6% (T1D) / 9.4% (T2D) were diagnosed with foot mycoses and 3.6% (T1D) / 7.0% (T2D) with an open wound of foot. The total number of T2D patients with DFS was 2463, mean age 70.9 [SD: 11.0] years, 1045 (42.4%) women. A total of 553 (22.5%) patients had diabetes for <1 year, 1195 (48.5%) for 2–5 years, 547 (22.2%) for 6–10 and 168 (6.8%) for more than 10 years. **CONCLUSIONS:** Results from this analysis of a large representative German database show, that even though the prevalence of DFS among diabetic patients is relatively low, the prevalence of the main risk factors for DFS is much higher. Preventive efforts for avoiding DFS should mainly target these risk factors.

PDB12

GLYCATED HAEMOGLOBIN AS A SURROGATE MARKER FOR THE APPEARANCE AND PROGRESSION OF RETINOPATHY IN TYPE-1 DIABETES MELLITUS: SYSTEMATIC REVIEW AND META-ANALYSIS

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OBJECTIVES: We performed a systematic review and meta-analysis to examine the association between Hb_{A1c} and the appearance and progression of diabetic retinopathy (DR) in T1DM. **METHODS:** The two electronic medical databases (MEDLINE, CENTRAL) were searched to identify all papers reporting HbA1c level and retinopathy in T1DM. Observational and randomized, controlled trials (RCTs) with at least one year of follow-up were included. Estimates were made of the adjusted relative risk (RR) of complications for an increase in Hb_{A1c} of 1%. If available data were insufficient to calculate RR, the odds ratio (OR) was estimated. Weighted mean differences (WMD) in Hb_{A1c} level between the case group (i.e. with DR) and the control group (i.e. without DR) were also calculated. **RESULTS:** We identified 16 trials (4176 patients) that fulfilled the inclusion criteria. Based on four RCTs (n = 1597), pooled RR for progression of DR was calculated as 1.24 (95%CI:1.01–1.52) for an increase in Hb_{A1c} of 1%. Pooled data from four observational studies (n = 910) showed that RR of the incidence of DR was 1.59 (CI:1.34–1.89) for Hb_{A1c} increase of 1%. A meta-analysis of eight observational studies (n = 1171) demonstrated a lower Hb_{A1c} level in patients without DR compared with patients with DR (WMD = 0.82 [CI:0.69–0.96]). In addition, a meta-analysis of five observational studies revealed that mean Hb_{A1c} values were significantly lower in the group without progression of DR relative to the group with DR (WMD = 1.05 [CI:0.37–1.72]). One RCT included data on visual deterioration and macular oedema; analysis demonstrated that an increase in Hb_{A1c} level of 1% increased the risk of both macular oedema (RR = 1.81 [CI:1.17–2.81]) and visual deterioration (OR = 2.2 [CI:1.2–3.9]). **CONCLUSIONS:** The results of our systematic review indicate a strong correlation between Hb_{A1c} level and appearance and progression of DR in T1DM. Thus, Hb_{A1c} may be considered an excellent surrogate endpoint for DR in T1DM.

PDB13

MEDICATION PATTERN AND RISK OF STROKE AMONG TYPE II DIABETES MELLITUS IN TAIWAN-A POPULATION-BASED STUDY

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OBJECTIVES: This study uses 5-year population Type II diabetes mellitus data to determine the risk of stroke in Taiwan, taking into consideration the age and gender of patients, as well as medication pattern. **METHODS:** The 2,123,104 diabetic patients data used are from the Taiwan National Health Insurance Research Database covering the period from 1999 to 2004. Newly-diagnosed diabetic patient was defined as had 3 or more visits or at least a diabetic code during admission or emergency visit in 1999 with a diagnosis of (ICD-9-CM code 250) and who did not have any diabetic code in 1998, a total of 681,188 were identified from the database. 45,949 sample patients were identified from the database by a principal diagnosis of stoke (ICD-9-CM code 430–438) during next 5 years. The analyses were descriptive in nature, including numbers and percentages for the categorical variables. Multiple logistic regression was used to compute the relative risk for the associations between different medication rate, health service type, physicians, diabetic patients and clinical complications. **RESULTS:** We find that for the period under examination, there was statistic significant increase in diabetic stroke incidence with male, age, medication rate, hospital level visit rate, same physician visit rate and bed sore, neuropathy complications. **CONCLUSIONS:** Our finding of significant risk of stroke in diabetic patients of different medication pattern may be explained by severity of disease and important of management of diabetic patients.

DIABETES/ENDOCRINE DISORDERS – Cost Studies

PDB14

THE BUDGET IMPACT ANALYSIS OF VILDAGLIPTIN IN TYPE 2 DIABETES IN POLAND

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OBJECTIVES: To estimate the impact of the of vildagliptin reimbursement within the limits of type 2 diabetes mellitus treatment on the budget of the National Health Fund in Poland. **METHODS:** The budget impact analysis was performed with two years time horizon, from the public payer's perspective (National Health Fund) and also from both payers' perspective (National Health Fund and the patient). Polish cost data was used (only oral anti-hyperglycemic drugs were considered). Two scenarios were compared: *present*—without reimbursement of vildagliptin, and *future*—after reimbursement of vildagliptin. The prognosis of market vildagliptin shares, sent by the Novartis Poland, was used in the analysis. The rate of other oral anti-hyperglycemic drugs was estimated on the base of IMS data about the number of units sold in the first three quarters of the year 2008. Sensitivity analysis was performed to test the impact of changes in the assumed parameters of the analysis. **RESULTS:** Assuming the reimbursement of vildagliptin annual expenses from the budget of National Health Fund for anti-hyperglycemic drugs would raise by 320.4 thousand PLN (72 thousand €) in 2009 and 612.3 thousand PLN (137.7 thousand €) in 2010. Annual expenses